

REMARKS

Status of Claims

Claims 1-22 are pending in the application and are presented for examination.

Rejection Under 35 U.S.C. §103(a) - Kintner and acknowledged state of the art

Claims 1-7 and 11-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the acknowledged prior art of Figure 1 (everything but the valve 70), in view of Kintner, US 3,426,799 (Kintner). Applicant respectfully traverses this rejection.

All claims presently pending require a dual pneumatic actuated three-way valve with no coil spring return mechanism comprising two air pressure diaphragms and two valve seats, which is neither taught nor suggested by the acknowledged prior art of Figure 1 (everything but the valve 70) and Kintner.

According to the Examiner, the acknowledged prior art does not specifically disclose that the valve is a pneumatically actuated three-way valve as claimed. The Examiner, however, further argues (a) that Kintner shows a pneumatic actuated valve (figures 1 and 2) and a three-way valve (figure 3), both having no spring return mechanism, and (b) that the three-way valve comprises first (22), second (23) and third (24) valve ports with two pneumatic ports (8 and 6), two air pressure diaphragms (the rubber seal on the top of elements 10 and 12), and two valve seats (any two of 13, 14 and 15). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to combine the teachings of figures 1 and 2 of Kintner with the teaching of figure 3 of Kintner in order provide a pneumatically actuated three-way valve, and substitute the new pneumatically actuated three-way valve of Kintner for the three-way valve of figure 1 in order to make the medical device operate more precisely by having a pneumatic return mechanism that can be adjusted.

Applicant respectfully disagrees. First, the rubber seals on the top of elements 10 and 12 are *not* air pressure diaphragms, but rather are o-rings. In fact, Kintner expressly *teaches away* from valves such as those of the present invention that include air pressure diaphragms and valve seats, dismissing them as undesirable. Instead of valves having seats and diaphragms, Kintner advocates a valve actuated by a "piston which can be moved by application of extremely small pressures to operate the valve" and which dispenses with the need for "costly stems, and unreliable seats and diaphragms." (col.1, lines 7-15).

Thus, even assuming solely for the sake of argument that one of skill in the art were motivated to combine Kintner with the acknowledged prior art, which that person would not, the result would not be the present invention.

In response to these arguments, the Examiner is now taking the position that the O-rings of Kintner are air pressure diaphragms as claimed (emphasis added):

... [A]pplicant argues that the rubber seals on the top of elements 10 and 12 are not air pressure diaphragms but are o-rings and that Kintner teaches away from valves with air pressure diaphragms. The examiner respectfully disagrees. It is noted that since the applicant has not claimed any structure of the present invention's air pressure diaphragms, and the "o-rings" of Kintner act as an air pressure diaphragm by moving and sealing off chambers or air for each other, the "o-rings" of Kintner meet all the requirements of the air pressure diagrams in the applicant's claims. The rubber seals on elements 10 and 12 are being considered air pressure diaphragms because they include all structural features of the applicant's claimed air pressure diaphragms as well as perform each and every claimed function of the applicant's claimed air pressure diaphragms. Regarding Kintner teaching away from air pressure diaphragms, *it is noted that the examiner is not modify the valve of Kintner to include air pressure diaphragms, he is merely calling an element (the rubber seals) of Kintner air pressure diaphragms* because that element includes all claimed features of the air pressure diaphragm of the applicant's claim as well as performs all functions of the air pressure diaphragm of the applicant's claim. The examiner is not changing the structure or operation of Kintner in any way.

Applicant respectfully disagrees.

First, as can be seen from the discussion in Kintner, (a) valves with diaphragms were known in the art, (b) "diaphragm" is a term of art in the valve art, and (c) the valves described in Kintner do not have these features.

With regard to point (b), see further the diaphragm shown in the valve structure of U.S. 5,758,864 to Asai (of record, considered by the Examiner 4/8/10). See also the Chemline Plastics Ltd. (2001) literature (used in the 35 U.S.C. 103 rejection below), entitled "Type 730 Diaphragm Valves," particularly the diaphragm 9 on page 4. Note also the o-rings described therein. Clearly, one of skill in the valve art would not confuse an o-ring with a diaphragm.

Moreover, even assuming solely for the sake of argument that diaphragm is not a term of art in the valve art (which it is), the term nonetheless has meaning and cannot be ignored. In this regard, *The American Heritage® Dictionary of the English Language, Fourth Edition*, defines "diaphragm" as follows:

di-a-phragm

n.

1. *Anatomy* A muscular membranous partition separating the abdominal and thoracic cavities and functioning in respiration. Also called *midriff*.

2. A membranous part that divides or separates.
3. A thin disk, especially in a microphone or telephone receiver, that vibrates in response to sound waves to produce electric signals, or that vibrates in response to electric signals to produce sound waves.
4. A contraceptive device consisting of a thin flexible disk, usually made of rubber, that is designed to cover the uterine cervix to prevent the entry of sperm during sexual intercourse.
5. A disk having a fixed or variable opening used to restrict the amount of light traversing a lens or optical system.

Of these, the pertinent definition vis-à-vis the diaphragm valve art is the second one, i.e., “a membranous part that divides or separates.” The o-rings of Kintner cannot meet the requirements of the air pressure diagrams in the applicant's claims at least in that the o-rings are not membranous.

In addition, the Examiner urges that it would be obvious to substitute the new pneumatically actuated three-way valve of Kintner (which does not meet the limitations of the claims for the reasons discussed) for the three-way valve of figure 1 “in order to make the medical device operate more precisely by having a pneumatic return mechanism that can be adjusted.” It is not seen, however, why such a valve would operate more precisely than the valve of figure 1 or why a more precise valve would be useful in figure 1.

Claims 2, 4 and 11

Entirely different in its mechanism from the valves of the present invention, the Kintner valve involves a sliding piston assembly that moves from a default closed “seated position” to an “open position.” Specifically, Kintner teaches “floating O-rings” wrapped around a series of pistons that are mounted on piston rods. In its default state, as shown in Fig. 1 of Kintner, the valve is in the “closed position.” (col. 1, lines 35-37). Then, “[i]n operation, the O-ring actually “floats” radially outwardly as it moves from the position shown in Fig. 1 to that shown in Fig. 2 since the stretched O-ring leaves its seating position during such movement as it slides across the recessed area 16 in the flow stream. Line pressures immediately encapsulate the O-ring.” (col. 2, lines 48-66).

Clearly, there is nothing in Kintner to support the assertion that the piston-valve of Kintner could result in a three-way valve having “a default neutral state in which all valve seats of said three-way valve remain open when supply pressure operating said valve is removed.” See claims 2, 4 and 11. In this regard:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because

inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted)...

See MPEP 2112.

For at least the above reasons, reconsideration of the rejection of claims 1-7 and 11-20 under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art of figure 1 (everything but the valve 70) in view of Kintner is respectfully requested.

Rejection Under 35 U.S.C. §103(a) – Liston in view of Kintner

Claims 1-4, 6, 7 and 10-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Liston, US 3,817,425 (Liston) in view of Kintner. Applicant respectfully traverses this rejection.

All claims presently pending require a dual pneumatic actuated three-way valve with no coil spring return mechanism comprising two air pressure diaphragms and two valve seats.

According to the Examiner, Liston does not specifically disclose that the valve is a pneumatically actuated three-way valve as claimed. The Examiner, however, further argues (a) that Kintner shows a pneumatic actuated valve (figures 1 and 2) and a three-way valve (figure 3), both having no spring return mechanism, and (b) that the three-way valve comprises first (22), second (23) and third (24) valve ports with two pneumatic ports (8 and 6), two air pressure diaphragms (the rubber seal on the top of elements 10 and 12), and two valve seats (any two of 13, 14 and 15). The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to combine the teachings of figures 1 and 2 of Kintner with the teaching of figure 3 of Kintner in order provide a pneumatically actuated three-way valve, and substitute the new pneumatically actuated three-way valve of Kintner for the three-way valve of Liston in order to make the medical device operate more precisely by having a pneumatic return mechanism that can be adjusted.

Applicant respectfully disagrees for the reasons analogous to those set forth in the prior section. Specifically, the rubber seals on the top of elements 10 and 12 are *not* air pressure

diaphragms, but rather are o-rings. In fact, Kintner expressly *teaches away* from valves such as those of the present invention that include air pressure diaphragms and valve seats, dismissing them as undesirable. Instead of valves having “unreliable seats and diaphragms,” Kintner advocates a valve actuated by a “piston which can be moved by application of extremely small pressures to operate the valve” and which dispenses with the need for “costly stems, and unreliable seats and diaphragms.” (col.1, lines 7-15).

Moreover, the Examiner urges that it would be obvious to substitute the new pneumatically actuated three-way valve of Kintner (which does not meet the limitations of the claims for the reasons discussed) for the three-way valve of Liston “in order to make the medical device operate more precisely by having a pneumatic return mechanism that can be adjusted.” It is not seen, however, why such a valve would operate more precisely than the valve of Liston or why a more precise valve would be useful in Liston.

Claims 2, 4 and 11

Entirely different in its mechanism from the valves of the present invention, the Kintner valve involves a sliding piston assembly that moves from a default closed “seated position” to an “open position.” Specifically, Kintner teaches “floating O-rings” wrapped around a series of pistons that are mounted on piston rods. In its default state, as shown in Fig. 1 of Kintner, the valve is in the “closed position.” (col. 1, lines 35-37). Then, “[i]n operation, the O-ring actually “floats” radially outwardly as it moves from the position shown in Fig. 1 to that shown in Fig. 2 since the stretched O-ring leaves its seating position during such movement as it slides across the recessed area 16 in the flow stream. Line pressures immediately encapsulate the O-ring.” (col. 2, lines 48-66).

Clearly, there is nothing in Kintner to support the assertion that the piston-valve of Kintner could result in a three-way valve having “a default neutral state in which all valve seats of said three-way valve remain open when supply pressure operating said valve is removed.” See claims 2, 4 and 11.

For at least the above reasons, reconsideration of the rejection of claims 1-4, 6, 7 and 10-20 under 35 U.S.C. 103(a) over Liston in view of Kintner is respectfully requested.

Rejection Under 35 U.S.C. §103(a) - Kintner and acknowledged state of the art

Claims 1-7 and 10-22 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the acknowledged prior art of Figures 1-8 (including valve 70), in view of Kintner.

Applicant respectfully traverses this rejection.

As noted by the Examiner, the admitted prior art does not specifically disclose that the valve is a pneumatically actuated three-way valve comprising two air pressure diaphragms and with no spring return mechanism.

The Examiner attempts to make up for this deficiency, however, by turning to Kintner, urging that “Kintner shows a pneumatic actuated valve that has a pneumatic port on one end, to move the valve assembly to the open position, and either a spring return mechanism (figures 4 and 5) or another pneumatic port on the other end (figure 4), to move the valve assembly to the closed position, therefore, Kintner teaches that an pneumatic port can be interchangeable with an return spring mechanism.”

The Examiner further argues that it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to replace the spring return mechanism of the prior art Takasago valve with a pneumatic port, including an air pressure diaphragm, in order to move the valve assembly in the opposite direction as the already existing pneumatic port and air pressure diaphragm, as taught by Kintner and (b) that this modification would “give the valve more accuracy in positioning the valve assembly between the two valve seats.”

Applicant respectfully disagrees. In this regard, it is believed that the prior art valve with the pneumatic port and spring return mechanism is at least equally as accurate in positioning the valve assembly as the proposed dual pneumatic valve when in use. Moreover, there are good reasons *not* to replace the spring return with a pneumatic return including the fact that the pneumatic return is significantly more complex in design than a spring return.

Furthermore, as noted above, Kintner expressly *teaches away* from valves such as those of the present invention that include air pressure diaphragms and valve seats, dismissing them as undesirable. Instead of valves having seats and diaphragms, Kintner advocates a valve actuated by a “piston which can be moved by application of extremely small pressures to operate the valve” and which dispenses with the need for “costly stems, and unreliable seats and

diaphragms.” (col.1, lines 7-15). One of ordinary skill in the art would *not* resort to the teachings of Kintner to modify a valve that contains such “unreliable seats and diaphragms”.

In the current Office Action dated March 4, 2011, the Examiner argues the following (emphasis added):

Additionally, Kitner discloses multiple embodiments including dual pneumatically actuated valves (fig 1 and 2), three way valves (fig 3) and spring return valves (fig 5 and 6). Kitner discloses a multiple valves with multiple means of operation, all interchangeable with each other for various operations depending on what and where the valve is going to be used. The rejection merely replaces the spring return mechanism of the prior art three way valve of the present invention with a second pneumatic operator as shown in figures 1 and 2 of Kitner. ***The Kitner reference is being used to teach that a pneumatic valve with a single pneumatic actuator and a spring return mechanism can be changed to a dual actuating pneumatic valve.*** With the teaching of Kitner, one of ordinary skill in the art would be able to replace the spring return mechanism of the prior art valve of the present invention, with another pneumatic actuator (23 identical to the one in the prior art valve of the present invention), in order to make the valve function pneumatically in both directions as shown by Kitner figure 1 and 2.

Applicant respectfully disagrees. For example, Kintner teaches away from valves involving seat and diaphragms as noted above, and this teaching cannot be ignored. “A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.” MPEP 2141.02 (citing *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984)). See also *Bausch & Lomb v. Barnes-Hind/Hydrocurve, Inc.*, 796 F.2d 443, 447-49, 230 USPQ 416, 419-20 (Fed. Cir. 1986) (“It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one skilled in the art.”)

Claims 2, 4, 11, 21 and 22

Moreover, even assuming for the sake of argument that one were to replace the spring return mechanism of the prior art Takasago valve with a pneumatic port, including an air pressure diaphragm, there is no reason, absent the hindsight gained from the present disclosure, to modify the valve in the same precisely the same fashion as Applicant such that a default neutral state is achieved in which all valve seats of said three-way valve remain open when supply pressure operating said valve is removed.

Furthermore, as noted in paragraph [0027], prior art spray machines like that of FIG 1 are exposed to coating solutions that can function like glue when dried, causing valves to fail. As the valves fail, they are swapped or repaired. Repairs typically involve replacement of the air pressure diaphragm. In an attempt to reduce such replacements/repairs, the present inventor elected to replace the spring return of an existing diaphragm valve with a pneumatic return. As modified by the inventor, the resulting, double pneumatic acting pneumatic valve has a default neutral state so that the valve seats remain open when not in use, which prevents gluing of the valve seats in the closed position. This problem is not known in the prior art, such a valve is not known in the prior art, and the advantageous result of using such a valve is unexpected in view of the prior art.

The totality of the record must be considered when determining whether a claimed invention would have been obvious to one of ordinary skill in the art at the time the invention was made, and evidence and arguments directed to advantages of the invention cannot be disregarded. See MPEP 716.02(f) and *In re Chu*, 66 F.3d 292, 298-99, 36 USPQ2d 1089, 1094-95 (Fed. Cir. 1995).

For at least the above reasons, reconsideration of the rejection of claims 1-7 and 10-22 under 35 U.S.C. 103(a) as being unpatentable over the acknowledged prior art of Figures 1-8 (including valve 70) in view of Kintner is respectfully requested.

Rejection Under 35 U.S.C. §103(a) – Acknowledged prior art, Kintner and Chemline Plastics

Claims 8 and 9 have been rejected under 35 U.S.C. §103(a) as being unpatentable over acknowledged prior art of Figures 1-8, in view of Kintner and further in view of Chemline Plastics Ltd. (2001). Applicant respectfully traverses this rejection.

Claim 5, from which claims 8 and 9 depend, is patentable over the acknowledged prior art of Figures 1-8 in view of Kintner for the reasons set forth above. Chemline Plastics Ltd. (2001), which is cited as evidence of a pneumatic valve with stainless steel threaded inserts, does not make up for these deficiencies.

Reconsideration of the rejection under 35 U.S.C. §103(a) is therefore requested.

Conclusion

Should the Examiner be of the view that an interview would expedite consideration of the application, request is made that the Examiner telephone the Applicants' attorney at (703) 433-0510 in order that any outstanding issues be resolved.

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